

Release notes for ENDF/B Development photoat-080_Hg_000
evaluation

ENDF
B-VII.dev

October 13, 2016

- checkr Warnings:

1. A previous error halted parsing of the current section
MAT=8000, MF= 1, MT=451 (1): Parsing stopped

```
ERROR(S) FOUND IN MAT=8000, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      165 TO      199
```

- checkr Errors:

1. A variable is outside the allowed ENDF range
MAT=8000, MF= 1, MT=451 (0): Variable range

```
ERROR(S) FOUND IN MAT=8000, MF= 1, MT=451
MOD =      3 OUT OF RANGE      0 -      1      RECORD NUMBER      165
```

2. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=501 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8000, MF=23, MT=501
SECTION 23/501 NOT IN DIRECTORY      RECORD NUMBER      201
```

3. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=502 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8000, MF=23, MT=502
SECTION 23/502 NOT IN DIRECTORY      RECORD NUMBER      1044
```

4. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=504 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8000, MF=23, MT=504
SECTION 23/504 NOT IN DIRECTORY      RECORD NUMBER      1419
```

5. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=515 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8000, MF=23, MT=515
SECTION 23/515 NOT IN DIRECTORY      RECORD NUMBER      1460
```

6. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=516 (0): Directory (b)

```
ERROR(S) FOUND IN MAT=8000, MF=23, MT=516
SECTION 23/516 NOT IN DIRECTORY      RECORD NUMBER      1495
```

7. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=517 (0): Directory (b)

- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=517 | RECORD NUMBER | 1550 |
| SECTION 23/517 NOT IN DIRECTORY | | |
8. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=522 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=522 | RECORD NUMBER | 1592 |
| SECTION 23/522 NOT IN DIRECTORY | | |
9. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=534 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=534 | RECORD NUMBER | 1993 |
| SECTION 23/534 NOT IN DIRECTORY | | |
10. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=535 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=535 | RECORD NUMBER | 2013 |
| SECTION 23/535 NOT IN DIRECTORY | | |
11. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=536 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=536 | RECORD NUMBER | 2036 |
| SECTION 23/536 NOT IN DIRECTORY | | |
12. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=537 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=537 | RECORD NUMBER | 2059 |
| SECTION 23/537 NOT IN DIRECTORY | | |
13. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=538 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=538 | RECORD NUMBER | 2083 |
| SECTION 23/538 NOT IN DIRECTORY | | |
14. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=539 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=539 | RECORD NUMBER | 2108 |
| SECTION 23/539 NOT IN DIRECTORY | | |
15. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=540 (0): Directory (b)

- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=540 | RECORD NUMBER | 2136 |
| SECTION 23/540 NOT IN DIRECTORY | | |
16. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=541 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=541 | RECORD NUMBER | 2165 |
| SECTION 23/541 NOT IN DIRECTORY | | |
17. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=542 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=542 | RECORD NUMBER | 2197 |
| SECTION 23/542 NOT IN DIRECTORY | | |
18. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=543 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=543 | RECORD NUMBER | 2227 |
| SECTION 23/543 NOT IN DIRECTORY | | |
19. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=544 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=544 | RECORD NUMBER | 2256 |
| SECTION 23/544 NOT IN DIRECTORY | | |
20. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=545 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=545 | RECORD NUMBER | 2289 |
| SECTION 23/545 NOT IN DIRECTORY | | |
21. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=546 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=546 | RECORD NUMBER | 2322 |
| SECTION 23/546 NOT IN DIRECTORY | | |
22. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=547 (0): Directory (b)
- | | | |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=8000, MF=23, MT=547 | RECORD NUMBER | 2368 |
| SECTION 23/547 NOT IN DIRECTORY | | |
23. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=548 (0): Directory (b)

- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=548 | | |
| | SECTION 23/548 NOT IN DIRECTORY | RECORD NUMBER | 2415 |
24. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=549 (0): Directory (b)
- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=549 | | |
| | SECTION 23/549 NOT IN DIRECTORY | RECORD NUMBER | 2474 |
25. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=550 (0): Directory (b)
- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=550 | | |
| | SECTION 23/550 NOT IN DIRECTORY | RECORD NUMBER | 2534 |
26. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=551 (0): Directory (b)
- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=551 | | |
| | SECTION 23/551 NOT IN DIRECTORY | RECORD NUMBER | 2570 |
27. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=552 (0): Directory (b)
- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=552 | | |
| | SECTION 23/552 NOT IN DIRECTORY | RECORD NUMBER | 2615 |
28. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=553 (0): Directory (b)
- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=553 | | |
| | SECTION 23/553 NOT IN DIRECTORY | RECORD NUMBER | 2658 |
29. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=554 (0): Directory (b)
- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=554 | | |
| | SECTION 23/554 NOT IN DIRECTORY | RECORD NUMBER | 2722 |
30. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=23, MT=559 (0): Directory (b)
- | | | | |
|--|---|---------------|------|
| | ERROR(S) FOUND IN MAT=8000, MF=23, MT=559 | | |
| | SECTION 23/559 NOT IN DIRECTORY | RECORD NUMBER | 2786 |
31. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=27, MT=502 (0): Directory (b)

ERROR(S) FOUND IN MAT=8000, MF=27, MT=502
SECTION 27/502 NOT IN DIRECTORY RECORD NUMBER 2828

32. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=27, MT=504 (0): Directory (b)

ERROR(S) FOUND IN MAT=8000, MF=27, MT=504
SECTION 27/504 NOT IN DIRECTORY RECORD NUMBER 2878

33. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=27, MT=505 (0): Directory (b)

ERROR(S) FOUND IN MAT=8000, MF=27, MT=505
SECTION 27/505 NOT IN DIRECTORY RECORD NUMBER 2929

34. Missing a section in directory so your directory is messed up. This error will break everything else
MAT=8000, MF=27, MT=506 (0): Directory (b)

ERROR(S) FOUND IN MAT=8000, MF=27, MT=506
SECTION 27/506 NOT IN DIRECTORY RECORD NUMBER 3060

• **linear** Errors:

1. Negative cross section found
0: Neg. Sig(E)

```
Linearize ENDF/B Cross Sections (LINEAR 2015-1)
-----
Retrieval Criteria----- MAT
Monitor Mode----- Off
Minimum Cross Section----- 1.0000E-10 (Default Option)
... [73 more lines]
```

• **fudge-4.0** Warnings:

1. generic warning message
reaction label 0: Hg + gamma [coherent] / Product: gamma (Error # 0): Warning

WARNING: coherentScattering is not a valid distribution component for 2-body reaction

2. FIXME: Generic fudge unimplemented message
reaction label 0: Hg + gamma [coherent] / Product: gamma (Error # 2): Generic unimp (c)

WARNING: Checking not yet implemented for pointwise type data

3. generic warning message
reaction label 1: Hg + gamma [incoherent] / Product: gamma (Error # 0): Warning

WARNING: incoherentScattering is not a valid distribution component for 2-body reaction

4. FIXME: Generic fudge unimplemented message
reaction label 1: Hg + gamma [incoherent] / Product: gamma (Error # 2): Generic unimp (c)

WARNING: Checking not yet implemented for piecewise type data

5. Cross sections do not correctly sum up properly according to an ENDF (or equivalent)
sumrule
summedReaction label 26: total (Error # 0): Sumrule

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 100.00%

6. Cross sections do not correctly sum up properly according to an ENDF (or equivalent)
sumrule
summedReaction label 28: photoelectric absorption (Error # 0): Sumrule

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 68.83%

• fudge-4.0 Errors:

1. Calculated and tabulated thresholds don't agree
reaction label 0: Hg + gamma [coherent] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!

2. 2-body reaction not in center-of-mass frame
reaction label 0: Hg + gamma [coherent] / Product: gamma (Error # 1): 2-body not in COM

WARNING: 2-body reaction not in center-of-mass frame!

3. Calculated and tabulated thresholds don't agree
reaction label 1: Hg + gamma [incoherent] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!

4. 2-body reaction not in center-of-mass frame
reaction label 1: Hg + gamma [incoherent] / Product: gamma (Error # 1): 2-body not in COM

WARNING: 2-body reaction not in center-of-mass frame!

5. Energy range of data set does not match cross section range
reaction label 1: Hg + gamma [incoherent] / Product: gamma / Distribution incoherentScattering - piecewise: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (0.0 -> 1000000000.0) vs (1.0 -> 1e+11)

6. Calculated and tabulated thresholds don't agree
reaction label 2: e- + e+ + Hg [electron field] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2.044e6 eV!

7. Calculated and tabulated thresholds don't agree
reaction label 3: $e^- + e^+ + \text{Hg}$ [nuclear field] / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!
8. Calculated and tabulated thresholds don't agree
reaction label 4: $e^- + \text{Hg}1s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 83353. eV!
9. Calculated and tabulated thresholds don't agree
reaction label 5: $e^- + \text{Hg}2s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 14826. eV!
10. Calculated and tabulated thresholds don't agree
reaction label 6: $e^- + \text{Hg}2p1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 14254. eV!
11. Calculated and tabulated thresholds don't agree
reaction label 7: $e^- + \text{Hg}2p3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 12287. eV!
12. Calculated and tabulated thresholds don't agree
reaction label 8: $e^- + \text{Hg}3s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3536.8 eV!
13. Calculated and tabulated thresholds don't agree
reaction label 9: $e^- + \text{Hg}3p1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 3273.9 eV!
14. Calculated and tabulated thresholds don't agree
reaction label 10: $e^- + \text{Hg}3p3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2836.9 eV!
15. Calculated and tabulated thresholds don't agree
reaction label 11: $e^- + \text{Hg}3d3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2394.8 eV!
16. Calculated and tabulated thresholds don't agree
reaction label 12: $e^- + \text{Hg}3d5/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 2300.8 eV!
17. Calculated and tabulated thresholds don't agree
reaction label 13: $e^- + \text{Hg}4s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 787.4400000000001 eV!

18. Calculated and tabulated thresholds don't agree
reaction label 14: $e^- + \text{Hg}4p1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 673.17 eV!
19. Calculated and tabulated thresholds don't agree
reaction label 15: $e^- + \text{Hg}4p3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 567.13 eV!
20. Calculated and tabulated thresholds don't agree
reaction label 16: $e^- + \text{Hg}4d3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 378.21 eV!
21. Calculated and tabulated thresholds don't agree
reaction label 17: $e^- + \text{Hg}4d5/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 358.42 eV!
22. Calculated and tabulated thresholds don't agree
reaction label 18: $e^- + \text{Hg}4f5/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 113.5 eV!
23. Calculated and tabulated thresholds don't agree
reaction label 19: $e^- + \text{Hg}4f7/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 109.13 eV!
24. Calculated and tabulated thresholds don't agree
reaction label 20: $e^- + \text{Hg}5s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 125.73 eV!
25. Calculated and tabulated thresholds don't agree
reaction label 21: $e^- + \text{Hg}5p1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 87.34 eV!
26. Calculated and tabulated thresholds don't agree
reaction label 22: $e^- + \text{Hg}5p3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 68.3 eV!
27. Calculated and tabulated thresholds don't agree
reaction label 23: $e^- + \text{Hg}5d3/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 15.98 eV!
28. Calculated and tabulated thresholds don't agree
reaction label 24: $e^- + \text{Hg}5d5/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 13.96 eV!

29. Calculated and tabulated thresholds don't agree
reaction label 25: $e^- + \text{Hg}6s1/2$ / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 9.550000000000001 eV!

30. Calculated and tabulated thresholds don't agree
summedReaction label 26: total / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1. eV!

31. Calculated and tabulated thresholds don't agree
summedReaction label 27: pair product / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 1.022e6 eV!

32. Calculated and tabulated thresholds don't agree
summedReaction label 28: photoelectric absorption / Cross section: (Error # 0): Threshold mismatch

WARNING: Calculated and tabulated thresholds disagree: 1.e-5 eV vs 9.550000000000001 eV!

- **xsectplotter** Warnings:

1. Encountered runtime warning in xsectplotter or Fudge or matplotlib
Error: RuntimeWarning

stderr while processing crossSection

/usr/local/lib/python2.7/site-packages/matplotlib-1.3.1-py2.7-linux-x86_64.egg/matplotlib/pyplot.py:412: RuntimeWarning
... [3 more lines]